



AUSTRALIAN DESIGN AWARDS

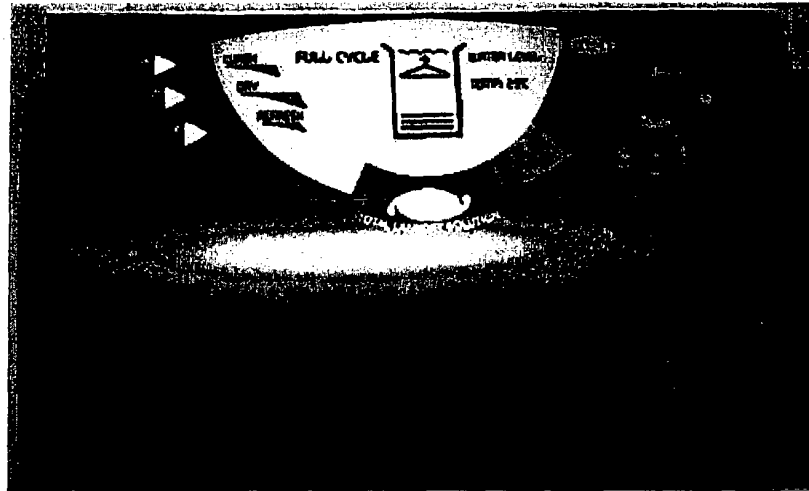
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628-01-02 : Total Laundry Solution (TLS)

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628-01-02 : Total Laundry Solution (TLS)



2.1. Title of project

Total Laundry Solution (TLS)

2.2. Description

Total Laundry Solution (TLS) is able to wash and dry clothing without wrinkles, perform the laundry in one stylish designed unit. The system is essentially a slender vertical cabinet where clothes are hung and incorporates a door with an inflatable seal creating a watertight chamber washed by ultrasonics - quicker and cleaner than ever before while a heat pump removes moisture for drying. The clothes remain in this hanging orientation throughout all processes. The water requirements are only half the floor space of a conventional top loader.

2.3. Principal function(s)

The clothes are loaded into the TLS via coat hangers or hung on the retractable line allowing garments to dry in their natural orientation. Garments are washed by ultrasonic agitation, tiny air bubbles are created knocking off stained/soiled areas from the clothes faster, requires little detergent and has been proven to be cleaner and less damaging.

The drying process of the TLS mimics outdoor drying, using low slow heat and airflow is achieved (in the cabinet) through a heat pump and fan, which evaporates and condenses in the closed system. As clothes are hung, they dry without wrinkling.

2.4. Statement of the brief for the project

Research has shown City livers have a logistical problem with drying their clothes, as backyard with a hills-hoist. Instead they struggle with tumble dryers, which d clotheshorses which take up precious apartment space.

The focus of the project was to satisfy the gap in the market for a drying apparatus. The system was designed to satisfy two aims: 1stly a drying product that does not dry clothing garments (as the tumble dryer does), which was non-demanding on the user, the floor space taken up by the system. 2ndly the system calls for a total rethink of functions as one unit and does not create associated issues of excess heat, dust, or noise when in operation.

2.5. Important and innovative features

The TLS has been designed to take the inconvenience out of the laundry, developing wash and dry without wrinkling garments. The system reduces the typical three-step process to one simple, functional and desirable product. The system incorporates easily understood controls that are preset at 'auto sensing' (see fig. TLS 04). The preset controls enable the TLS to perform efficiently, also allowing any user to confidently operate and perform a perfect laundry cycle. The sculptured recess in the back allows water hosing to neatly fit into the system, and the unit is placed up against the wall, maximising the user's space (see fig. TLS 02).

The TLS creates a watertight chamber with a hinged door by incorporating an innovative seal (a little like a bike tube) which is active throughout all 'wet' cycles and inflates to maintain pressure. The ultrasonic wash can then take place, being quicker, cleaner and less dependent on current washers. As garments are hung throughout all cycles, wrinkling is reduced, making the 'dreaded' task of ironing a thing of the past.

Savings also occur with the users time. The TLS completes all tasks within the one pro longer has to wait for the washing to finish before transporting clothing to the dry loads the system and goes about their day, saving three quarters of the time conventional laundry. The TLS is beneficial to the environment, as it uses half the w top loaders and the 'grey water' produced is environment friendly, as little detergent is occur with electricity, the TLS uses 30-60% less than other systems. It incorporates ne or agitators, which are noisy and produce the bulk of the breakdowns in current produ is a revolutionary product that completes all aspects of the laundry in one stylish design

2.6. Safety and Ergonomics

The TLS maximises access and internal space, as the system is front-loaded with no internal components required (see fig. TLS 03). The TLS surpasses current products as all components are completed within the one product, therefore there is no double handling of components and associated stresses and strains.

Safety precautions were taken in case of a power cut, a solenoid lock ensures the v locked and safe from spillage (locked in the 'inactive state'). The second precauti inflatable seal running around the perimeter of the door. This aids the sealing of the d by the mains water pressure. All electrical components are on the outside of the inn moisture and the users' hands. The system does not 'heat-up' like a conventional di pump was incorporated, drying clothes slowly but gently. This system reduces the incic can be a concern for tumble dryers.

2.7. Environmental features

Environmental considerations were at the forefront of the design. The small amount of water used produces more environmentally friendly 'grey water' for alternative uses. The TLS uses less water of conventional top loaders and a reduction of 30-60% in electricity. The TLS produces less noise, as there are no large motors or agitators and the ultrasound is above the level of human hearing. This increases its appeal to City dwellers as 'noise pollution' in an apartment space, is of the same order as the Hot steamy laundry rooms or a build up of mould (usually experienced with the use of conventional machines) have been eliminated. A heat pump (which dries garments) and the design of the inner drum to prevent moist hot air from escaping. The floor space consumed by a product is of high priority. As a result, the TLS occupies less than half of the floor space of a conventional washing machine.

The system has two layers; an inner layer - which houses water and clothes and air - houses the technical package and represents the exterior appearance of the system made from stainless steel, as it will be filled with water and is the structural strength

outer shell is made from molded plastic, mostly ABS. The front of the system (the door) is made from Polycarbonate as it has to withstand the pressure of the ultrasonics. Polycarbonate also has translucent properties, which aids vision into the system.

2.8. Styling / Aesthetics

Styling was also a major consideration for the design of the TLS as it has been primarily for young City dwellers. It was found that young City dwellers desire premium products, in both function and appearance. The outer shell of the TLS has the appearance of stainless steel (without the cost or weight) with a fresh appearance, echoing style, performance and cleanliness. Hard flowing lines run in vogue with sleek modern designs (see fig. TLS 01). The front of the system (door) is made with curved internal ribbing, mimicking the sense of using water and cleaning as we enter into the system. The easy-to-use control panel is shaped to mimic the collar of a shirt, intended use of the system and creating recognisable forms within a revolutionary product.

2.9. Manufacturing / Costing

As this design is so revolutionary, costing guidelines can only be estimated. With a new ultrasonic washer and current laundry products a costing estimate of \$700 - \$900 per unit. Retail value could be increased to \$2000 - \$2500, as the product does 'everything' in the 'high income' young City dwellers' market. A breakdown of the costing will follow: this is on a large scale of production. The ultrasonic transducers and generator will cost in the order of \$100 (the heat-pump system (which is already in production by whitegoods manufacturers) will cost in the order of \$50, the lengths of piping required have been minimised costing \$10. The material costs for the structural properties and therefore are more costly equating to approximately \$300 per unit (steel and ABS/ Polycarbonate components (this cost includes some of the costs of production machines)).

The TLS system has been designed to assemble onto one main frame. This frame is made of steel cabinet, which has supportive feet running to the ground. The technical package is housed underneath this cabinet and held in place by the adjoining ABS outer shell. The outer shell is held in place by interlocking slots and then bolted into place. This has been designed for simple assembly, with maintenance and inspection panels easily accessible.

2.10. Packaging / Marketability

The TLS has been designed to be as space saving as possible, the slim straight styling allows for compact packaging. The TLS has a sculptured recess in the back, which allows for the inlet and outlet hoses to be placed flat against the product, saving space when being packaged as a unit. The exterior dimensions of the product measure 1300H x 600W x 300D in millimeters. Cardboard packaging will enclose the product in a pre-assembled state, the user simply opens the door and switches it on.

The TLS would be marketed as a no fuss, no effort TOTAL LAUNDRY SOLUTION. Simply load the clothes, close the door and the TLS will wash and dry your clothes without wrinkling.

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Release 2.2.0:2.1.0